Vishay

Risk Management Plan
Santa Clara Facility

2201 Laurelwood Road
Santa Clara, California

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The purpose of the California Accidental Release Prevention (CalARP) program is to prevent accidental releases of regulated substances and to minimize the severity of those releases if they should occur. Under the CalARP program, a Risk Management Plan (RMP) is required for stationary sources that store regulated substances onsite above specified thresholds. The Administrating Agency, typically the Certified Unified Program Agency (CUPA), has the responsibility to implement the CalARP program. The Santa Clara City Fire Department, Hazardous Materials Division is the CUPA for the City of Santa Clara.

Vishay Siliconix (Vishay), a subsidiary of Vishay Intertechnology Inc., plans on using hydrogen chloride (HCl) at their Santa Clara facility in excess of the applicable state RMP threshold in a process. A *process* is defined as "any activity involving a regulated substance including any use, storage, manufacturing, handling, or on-site movement of such substances, or combination of these activities. For purposes of this definition, any group of vessels that are interconnected, or separate vessels that are located such that a regulated substance could be involved in a potential release, shall be considered a single process."

Facility Overview and Regulated Substances Handled

Vishay develops and manufactures power semiconductor products that improve the efficiency of power management circuitry in end products while reducing space requirements. This includes; MOSFETs (metal-oxide semiconductor field-effect transistors), used in handheld and portable electronic systems. Higher-voltage Vishay Siliconix power MOSFETs are used for applications from electric motor control in industrial systems to converting power in the switches and routers that enable the world's communications networks. Vishay Siliconix also develops and manufactures power ICs address markets ranging from mobile communications and computing to the fixed telecom infrastructure and include switchmode regulators, linear regulators, and power management devices.

The Vishay Santa Clara facility is located at 2201 Laurelwood Road, in Santa Clara, California (Figure 1). The Vishay Siliconix, Santa Clara facility consists of three interconnected manufacturing buildings (approximately 240,000 feet squared [ft^2]), and six small hazardous

material and waste storage buildings, located on 12 acres of property adjacent to the Intel complex. The facility is surrounded by an approximately 6-foot tall chain link fence. The buildings at the facility require key card access. In addition, there are surveillance cameras throughout the property, including in the proposed HCl storage area.

Vishay plans to install three 600-pound y-cylinders containing HCl gas to support their manufacturing operations. The HCl cylinders will be stored north of Building 2. There is a gate surrounding the chemical storage area, which restricts access to select employees. In addition, Vishay will at times store a fourth 600-pound hydrogen chloride cylinder in their chemical bunker as back-up.

From the Y-cylinders, the HCl gas is routed to a crossover box. The primary function of the crossover box is to switch between cylinders during change-outs. From the crossover box, gas flows to a deep pigtail purge (DPX) unit. The DPX directs gas to two "gas cabinets." The "gas cabinets" function to drop the HCl gas pressure from approximately 300-600 psi to 60-80 psi for delivery to the EPI Reactors. The crossover box, DPX, and gas cabinets are all exhausted to the dedicated scrubber.

Gas detectors are placed in strategic locations throughout the system to monitor for potential HCl leaks throughout the system. The system is also equipped with a pressure differential switch that would shut the gas in the event of a catastrophic release or if the gas cabinets failed to drop the HCl pressure from the 600 psi upstream of the cabinets to the 60-80 psi expected downstream.

The gas is used with other compatible chemicals in the EPI reactors. Each line is hard plumbed to prevent mixing of incompatible materials. After use at the EPI reactors, any process effluents are then routed to point of use abatement systems (POUs) which consist of a scrubber unit, different from the dedicated scrubber servicing the storage tanks, crossover box, DPX, and gas cabinets.

The CalARP program has different requirements based on various factors, including chemicals used and potential impact to off-site receptors. These requirements are divided into three levels: Program 1, Program 2, and Program 3, with Program 3 being the strictest. Program 2 requirements apply for Vishay's HCl process. The quantity of hydrogen chloride stored and the applicable level is summarized in Table ES-1.

Table ES-1 Applicable RMP Regulated Substances

Chemical Name	CAS Number	Maximum Intended Inventory (pounds)	State or Federal Applicability	Program Level
Hydrogen chloride	7664-41-7	2,400 lbs (in four 600 lb Y-Cylinders)	State	2

Worst-case and Alternative Release Scenarios

As required by the CalARP program, an off-site consequence analysis was performed for the process. The hydrogen chloride process is Program 2 process, so one worst-case and one alternative release scenario must be analyzed for each process. The worst-case release scenario was modeled as a catastrophic failure of one full Y-cylinder, resulting in the release of 600 pounds of hydrogen chloride. According to the EPA's release modeling software, RMP*Comp, such a release would conservatively result in a distance to TEP of 1.1 miles in an urban setting/topography. The worst-case Scenario (WCS) radius of impact consists mainly of commercial/industrial properties. There are two residential communities, several places of worship, schools, an amusement park, and Mission College within the WCS potential radius of impact. There are no public parks, federal building, hospitals, prisons, or long-term healthcare facilities within the WCS radius of impact. Also, there are no environmental receptors as defined in 19 CCR 2750.6.

Several alternative release scenarios were considered, many of which would result in the release being directed to a scrubber. The most reasonable alternative release scenario that would likely result in the largest quantity of hydrogen chloride being released into the atmosphere, and not directed to a scrubber, was chosen to be a release from a spent Y-cylinder during off-haul. It should be noted that several safeguards are in place to prevent such a release, including a protective cap over the valves during transport.

A conservative estimate of the amount of hydrogen chloride remaining in a spent cylinder is 60 lbs. To predict potential off-site impacts of the release the USEPA SLAB model was used. The SLAB model predicts the distance to the toxic endpoint to be 230 ft (70 meters) from the point of release. The area extends past the facility boundary into the Intel property to the north of the Vishay facility. There are no other commercial or residential areas within the ARS radius of impact. There are no

environmental receptors as defined by 19 CCR 2750.6 within the 70-meter radius.

General Accident Release Prevention Program/Policies and Chemical-Specific Prevention Steps

The facility has implemented a Prevention Program, as required by the CalARP. The program provisions are specifically intended to minimize the probability and/or consequences of accidental releases from the facility and include such measures as process safety information, operating and maintenance procedures, training, hazard review, compliance auditing, and management system. The facility Prevention Program is an ongoing system that is updated as required to reflect process changes.

Safety is a critical consideration in the design of the hydrogen chloride storage and conveyance system. A summary of specific accident prevention safeguards are identified below:

- Personnel operating and maintaining systems undergo routine training;
- Daily and monthly inspections of storage facilities;
- Detected leaks activate the facility gas Life Safety System (LSS) and notify the Emergency Response Team (ERT);
- Chemicals are stored within a secure are, with 24-hour security surveillance;
- The Y-cylinders, cross-over box, DPX, and gas cabinets are exhausted to a dedicated scrubber system;
- All connections and valves are exhausted to the dedicated scrubber;
- The system is rated to nearly 5 times the operating pressure of the HCl Y-cylinders;
- Only HCl compatible materials are used throughout the hydrogen chloride storage and conveyance system; and
- Operational and physical safeguards are in place to minimize the potential for release during cylinder transport.

Five year Accident History

The introduction of the hydrogen chloride Y-cylinders will be the first time the Vishay facility will exceed a CalARP threshold, thus requiring an

RMP. However, HCl has been used onsite at quantities below the CalARP threshold. During the past 5 years there have been no reportable releases at the Vishay facility involving HCl. A reportable release is one that resulted in either of the following:

- On-site deaths, injuries, or significant property damage; or
- Known off-site deaths, injuries, property damage, environmental damage, evacuations, sheltering in place, property damage, or environmental damage.

Emergency Response Program

Emergencies such as a fire, gas leaks or spills, are managed by the Emergency Response Team (ERT). The ERT is trained to control evacuations, respond to incipient fires (those that are in the initial stage and can be controlled or extinguished with portable fire extinguishers), perform first aid and CPR, and clean-up limited spills. For uncontrolled or uncontained releases, outside emergency services are notified to respond.

The facility has coordinated with the Santa Clara City Fire Department (SCCFD) with regard to emergency response to hydrogen chloride release.

Safety Management and Planned Changes to Improve safety

The facility is committed to ensuring its operations are safe and in accordance with all RMP requirements, and has assigned the Environmental Health and Safety Manager responsibility for RMP development, implementation, and compliance. Vishay is committed to maintaining the safety of the RMP-covered process through active adherence to the appropriate procedures and codes. To ensure that appropriate changes are implemented as necessary to maintain and improve safety, ongoing hazard reviews, training, audits, maintenance and investigations will be conducted as required by CalARP. Updates to the RMP will be completed as necessary in response to these activities. Per Section 2745.10 of the CalARP program, formal updates and submission of the revised RMP are required under the following circumstances:

- Within 5 years of the initial submission of the RMP;
- No later than 3 years after a newly regulated substance is first listed by the United States Environmental;

- Before the date which a regulated substance is first present above a threshold quantity in a process;
- Within 6 months of a change that requires a revised hazard review;
- Within 6 months of a change that requires a revised off-site consequence analysis;
- Within 6 months of a change that alters the Program level that applied to a covered process; and/or
- The Administrating Agency (SCFD, Hazardous Materials Division) determines that a significant modification to a covered process requires an update.

Any changes recommended during the initial and future Hazard Reviews will be evaluated for implementation to improve the overall safety of the facility.